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| APPLICATION NO.   | FILING DATE | FIRST NAMED INVENTOR   | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|------------------------|---------------------|------------------|
| 10/056,121  | 01/23/2002  | Stephen T. Wellinghoff | SWRI-2385(Z)-04     | 2627             |
| 23770   | 7590        | 06/07/2005             | EXAMINER            |                  |
| PAULA D. MORRIS<br>THE MORRIS LAW FIRM, P.C.<br>10260 WESTHEIMER, SUITE 360<br>HOUSTON, TX 77042-3110 |             |                        | OH, TAYLOR V        |                  |
|   |             |                        | ART UNIT            | PAPER NUMBER     |
|   |             |                        | 1625                |                  |

DATE MAILED: 06/07/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                        |  |                     |  |
|------------------------------|------------------------|--|---------------------|--|
| <b>Office Action Summary</b> | <b>Application No.</b> |  | <b>Applicant(s)</b> |  |
|                              | 10/056,121             |  | STEPHEN ET AL       |  |
|                              | <b>Examiner</b>        |  | <b>Art Unit</b>     |  |
|                              | Taylor Victor Oh       |  | 1625                |  |

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 07 April 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 112-173 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 112-173 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>2/1/05 &amp; 4/7/05</u> . | 6) <input type="checkbox"/> Other: _____  |

***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 12/17/04 has been entered.

**The Status of Claims:**

Claims 112-173 are pending.

Claims 112-173 have been rejected.

Claims 1-111 have been canceled.

**DETAILED ACTION**

1. In the preliminary amendment filed on 2/4/05, claims 3, 8-13, 15-17, and 34-36 have been amended and claim 37 has been newly added; Claims 1, 3-4, and 8-30, and 33-37 are under consideration in this Office Action.

Priority

2. It is noted that this application claims benefit of 60/263,387 (1/23/2001), which claims benefit of 60/263,392 (01/23/2001), which claims benefit of 60/263,388 (01/23/2001).

Drawings

3. None.

**Claim Objections**

Claim 147 is objected to under 37 CFR 1.75 as being a substantial duplicate of claim 149. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

Claim 149 is objected to under 37 CFR 1.75 as being a substantial duplicate of claim 147. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

Claim 148 is objected to under 37 CFR 1.75 as being a substantial duplicate of claim 150. When two claims in an application are duplicates or else are so close in

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content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

Claim 150 is objected to under 37 CFR 1.75 as being a substantial duplicate of claim 148. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

Claim 153 is objected to under 37 CFR 1.75 as being a substantial duplicate of claim 154. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

Claim 154 is objected to under 37 CFR 1.75 as being a substantial duplicate of claim 153. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

**Claim Rejections - 35 USC § 112**

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 112-173 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claims 112, 124, and 139, the term "general" is recited. However, the specification does not describe how general the formula can be for the formula. Arvin Industries v. Berns Air King corp., 525 F.2d 182, 188 U.S.P.Q. 49 (CCA 7-1975). Therefore, appropriate correction is required.

In claims 112, 124, and 139, the phrases "X and Y independently comprise groups", "both X and Y comprise polymerizable groups", "X comprises a polymerizable group", and "Y comprises an amino group" are recited. They are vague and indefinite because the term "comprise(s)" is an open language without a limit in the claim; the compound claims are specific within the boundary; these expressions do not exclude the presence of components in the compounds than the ones recited. Ex parte Muench, 79 USPQ 92 (PTO Bd. App. 1948) and Swain V. Crittendon, 332 F.2d 820, 141 USPQ 811 (C.C.P.A. 1964). Therefore, an appropriate correction is required.

In claims 115 , 122 , 127, 141-142, and 151-154 the phrases “ said CH<sub>2</sub> groups comprises a substitute ”, and “ said terminal functionalities comprise spacer groups” are recited. They are vague and indefinite because the term “ comprise(s)” is an open language without a limit in the claim; the compound claims are specific within the boundary; these expressions do not exclude the presence of components in the compounds than the ones recited. Exparte Muench , 79 USPQ 92 (PTO BD. APP. 1948) and Swain V. Crittendon , 332 F 2d 820 , 141 USPQ 811 (C.C.P.A 1964). Therefore, an appropriate correction is required.

In claims 113-114, 125-126 , 143-150, the phrases “ the group comprising a polymerizable unsaturated carbon-carbon bond” and “ acryloyloxy alkoxy groups and methacryloyloxy alkoxy groups comprising an alkyl moiety “are recited. They are vague and indefinite because the term “ comprise(s)” or “ comprising” is an open language without a limit in the claim; the compound claims are specific within the boundary; these expressions do not exclude the presence of components in the compounds than the ones recited. Exparte Muench , 79 USPQ 92 (PTO BD. APP. 1948) and Swain V. Crittendon , 332 F 2d 820 , 141 USPQ 811 (C.C.P.A 1964). Therefore, an appropriate correction is required.

In claims 135-138, and 171-173, the phrases “ X and Y comprise a spacer group” , “ X and Y comprise a cinnamoyloxy group ” are recited. They are vague and indefinite because the term “ comprise” is an open language without a limit in the

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claim; the compound claims are specific within the boundary; these expressions do not exclude the presence of components in the compounds than the ones recited.

Exparte Muench , 79 USPQ 92 (PTO BD. APP. 1948) and Swain V. Crittendon , 332 F 2d 820 , 141 USPQ 811 (C.C.P.A 1964). Therefore, an appropriate correction is required.

In claims 112 ,124, and 139 , the phrases “  $R^2$  is a bulky organic group having a bulk greater than  $R^1$  and  $R^3$  ”, “ said bulk provides sufficient steric hindrance ” ,and “  $R^1$  and  $R^3$  are selected groups less bulky than  $R^2$  ” are recited. They are vague and indefinite because they have used the functional languages , such as “ a bulk greater than ”, “ said bulk provides sufficient steric hindrance ” ,and “ less bulky ” ; these expressions do not elaborate exactly how each of the  $R^1$  ,  $R^2$  and  $R^3$  groups are different from one another; and this is because the definitive chemically structure of each group is unspecified.

Therefore, an appropriate correction is required.

Claim 116 recites the limitation "said substituted groups" in line 3. There is insufficient antecedent basis for this limitation in the claim.

Claim 117 recites the limitation "said substituted groups" in line 3. There is insufficient antecedent basis for this limitation in the claim.

### ***Double Patenting***

A rejection based on double patenting of the "same invention" type finds its support in the language of 35 U.S.C. 101 which states that "whoever invents or discovers any new and useful process ... may obtain a patent therefor ..." (Emphasis added). Thus, the term "same invention," in this context, means an invention drawn to identical subject matter. See *Miller v. Eagle Mfg. Co.*, 151 U.S. 186 (1894); *In re Ockert*, 245 F.2d 467, 114 USPQ 330 (CCPA 1957); and *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970).

A statutory type (35 U.S.C. 101) double patenting rejection can be overcome by canceling or amending the conflicting claims so they are no longer coextensive in scope. The filing of a terminal disclaimer cannot overcome a double patenting rejection based upon 35 U.S.C. 101.

Claims 112-123 are provisionally rejected under 35 U.S.C. 101 as claiming the same invention as that of claims 1-12 of copending Application No. 10/811,090. This is a provisional double patenting rejection since the conflicting claims have not in fact been patented.

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double

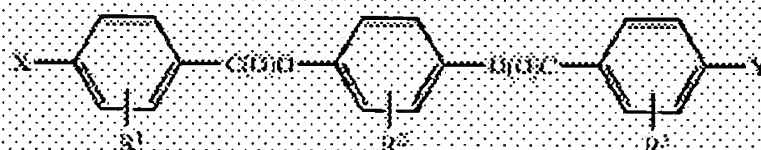
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patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 124-173 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 13-62 of copending Application No. 10/811,090. Although the conflicting claims are not identical, they are not patentably distinct from each other because Application No. 10/811,090 discloses mesogens having the following general formula :

13. Mesogens having the following general formula:



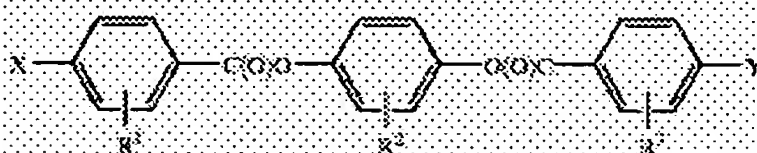
wherein

X and Y independently are selected from the group consisting of amino groups, polymerizable groups; provided that when X is a polymerizable group, Y is an amino group;

R<sup>2</sup> is a bulky organic group having a bulk greater than R<sup>1</sup> and R<sup>3</sup> whereby, when both X and Y are polymerizable groups, said bulk is adapted to provide sufficient steric hindrance to achieve a nematic state at room temperature while suppressing crystallinity at room temperature, thereby providing effective rheology and workability at room temperature; and

R<sup>1</sup> and R<sup>3</sup> are selected from groups less bulky than R<sup>2</sup> adapted to maintain said nematic state.

28. Mesogens having the following general formula:



wherein X and Y independently are selected from the group consisting of terminal functionalities and polymerizable groups, at least one of X and Y having the following general structure:

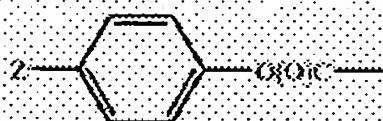


wherein Z is selected from the group consisting of terminal functionalities and polymerizable groups;

R² is a bulky organic group having a bulk greater than R¹ and R³ whereby, when both X and Y are polymerizable groups, said bulk is adapted to provide sufficient steric hindrance to achieve a nematic state at room temperature while suppressing crystallinity at room temperature, thereby providing effective rheology and workability at room temperature; and

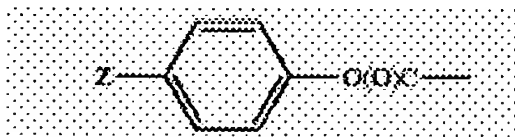
R¹ and R³ are selected from groups less bulky than R² adapted to maintain said nematic state.

However, the instant invention differs from the prior art in that , in claim 124 of the current invention , the limitation specifies " X comprises a polymerizable group, and Y comprises an amino group"; in claim 139 of the current invention, the limitation specifies " one or more member selected from the group consisting of X and Y having the following general structure :



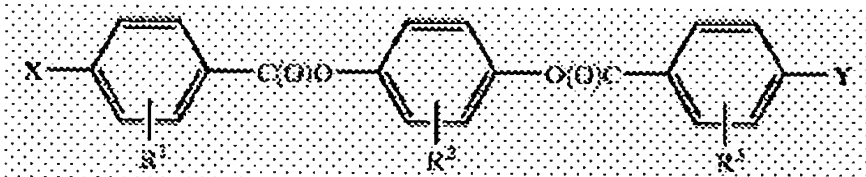
wherein Z is selected from the group consisting of a terminal functionality and a polymerizable group.

With respect to the claimed limitations in which "X comprises a polymerizable group, and Y comprises an amino group" and "one or more member selected from the group consisting of X and Y having the following general structure", the specification of the prior art does describe that X and Y independently are selected from the group consisting of amino groups, polymerizable groups and groups having the following

general structure :  (see page 1 ,paragraph 0010).

Therefore, there is an indirect teaching of explaining the phrase "one or more member" and the term "comprises" as alternative ways of expressing Markush groups regarding X and Y in the claimed languages. Therefore, there is no patentable distinction between the expression of the prior art and that of the current invention.

The prior art has disclosed the mesogens having the following general formula :

 , which is the same mesogens as in the current invention. The only difference between the prior art and the current invention is the scope of claimed limitation regarding X and Y. The prior art does indirectly offer guidance that the scope of X and Y can be expressed as Markush groups.

Therefore, it would have been obvious to the skilful artisan in the art to be motivated to use broad terminologies incorporated into the claims in order to get a much coverage and protection for the overall claimed invention.

Therefore, the present invention is not patentably distinct from the prior art with respect to the claims of themselves.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

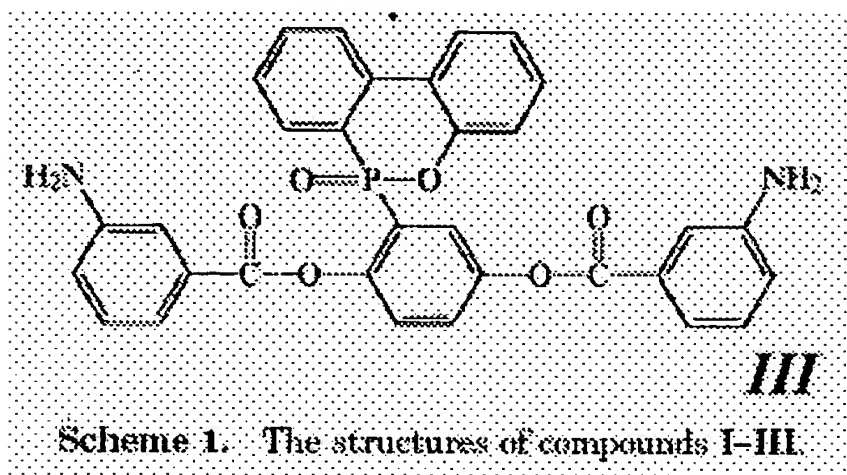
A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claims 112, 124, and 139-140 are rejected under 35 U.S.C. 102(b) as being anticipated clearly by Wang et al (Journal of Polymer Science, 4/1999, 37(7), p. 891-899).

Wang et al discloses the following compound (see page 893, scheme 1, compound III):



This is identical with the claims.

2. Claims 112 , 124, and 139-140 are rejected under 35 U.S.C. 102(b) as being anticipated clearly by Wan et al (Gaodeng Xuexiao Huaxue Xuebao ,1998, 19(9), p. 1507-1512).

Wan et al discloses the 1, 4-benzenediol, 2-ethenyl-, bis-(4-aminobenzoate) compound (see abstract page ). This is identical with the claims.

3. Claims 112 ,124 ,and 139-140 are rejected under 35 U.S.C. 102(a) as being anticipated clearly by Kiyoshi et al (JP-08-157597).

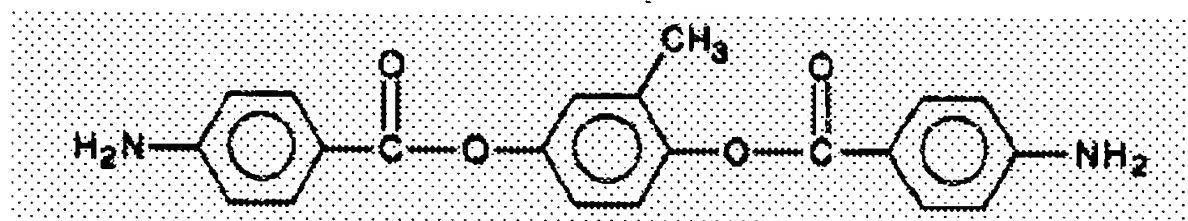
Kiyoshi et al discloses the 1, 4-bis (4-amino benzoyloxy)-2-chlorobenzene compound (see paragraph 0015, line 21). This is identical with the claims.

4. Claims 112, 118-119, 124, 130-131, and 139-140 are rejected under 35 U.S.C. 102(b) as being anticipated clearly by Kim et al ( European Polym. J. vol. 31, no. 6, p. 505-512, 1995).

Kim et al discloses the 1, 4-bis (4-amino benzoyloxy)-2-phenylbenzene compound ( page 505, line 10). This is identical with the claims.

5. Claims 112, 118-119 , 124, 130-131, and 139-140 are rejected under 35 U.S.C. 102(b) as being anticipated clearly by Aharoni ( Macromolecules (1987), 20 (40, p. 877-884).

Aharoni discloses the 1, 4-bis (4-amino benzoyloxy)-2-methybenzene compound in the following below (see page 878, scheme I, compound F):

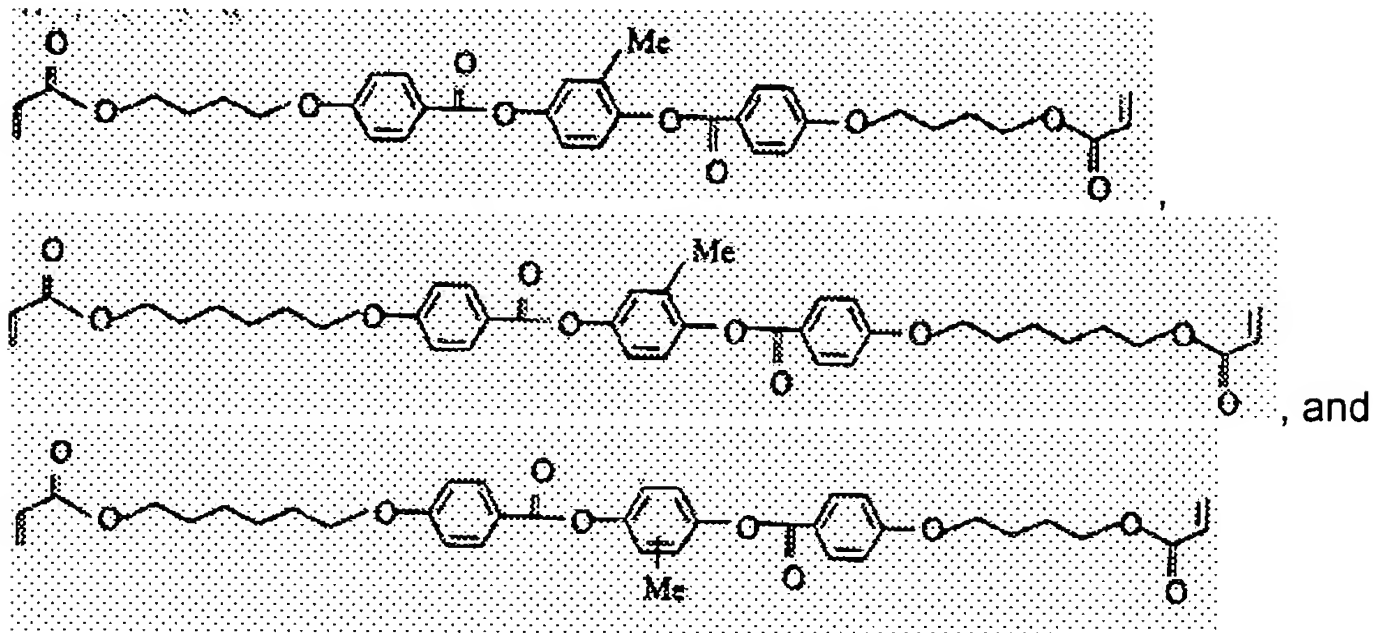


This is identical with the claims.

6. Claims 139, 143, 147, and 149 are rejected under 35 U.S.C. 102(b) as being anticipated clearly by Meyer et al ( GB 2330139).

Meyer et al discloses the following compound below (see page 14 ,lines 10-25):

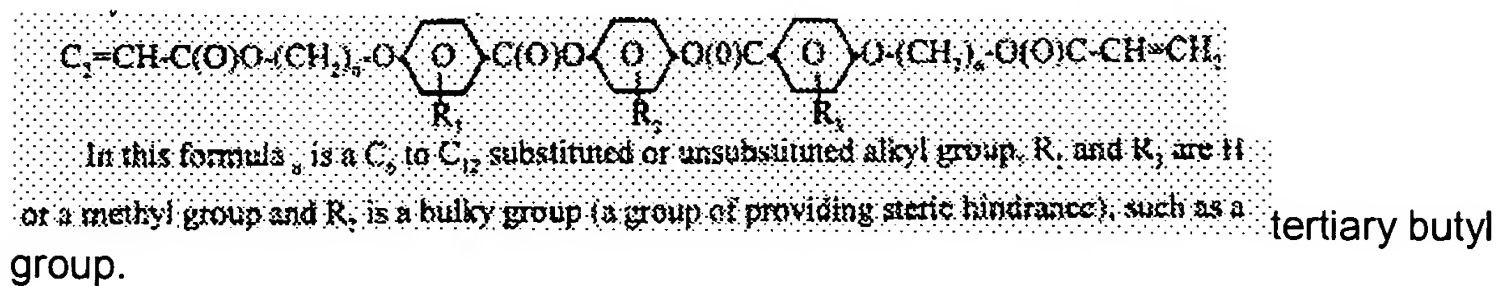
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This is identical with the claims.

7. Claims 139, 143, 147, and 149 are rejected under 35 U.S.C. 102(b) as being anticipated clearly by Wellinghoff (WO 98/13008).

Wellinghoff discloses the following compound below (see page 3, lines 25-29):

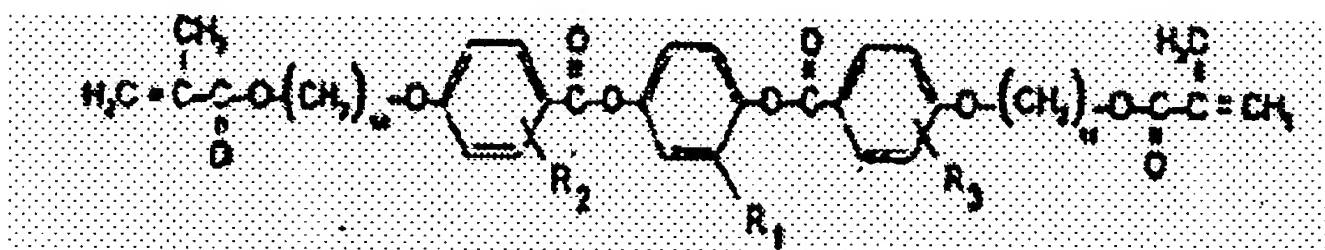


This is identical with the claims.

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8. Claims 139, 143, 147, and 149 are rejected under 35 U.S.C. 102(b) as being anticipated clearly by Wellinghoff et al (J. Den. Res. 1997, p. 279 (abstract 2127), vol. 76).

Wellinghoff et al discloses the following compound below (see abstract 2127) ):



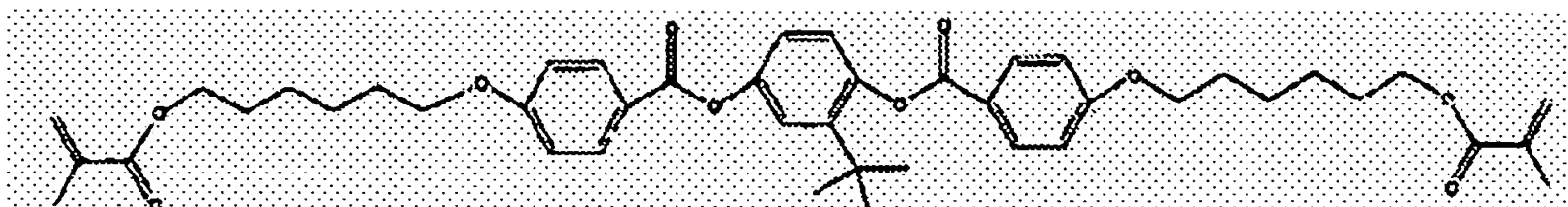
**$R_{1,2,3} = H$ .  $R_1 = CH_3, CH_3O$ , or 1-butyl.  $n = \text{no. of } CH_2 \text{ groups (10 in this example)}$**

This is identical with the claims.

9. Claims 139, 143, 147, and 149 are rejected under 35 U.S.C. 102(a) as being anticipated clearly by Norling et al (American association for Dental Research meeting , April 2000) .

Norling et al discloses the following compound below (see abstract):

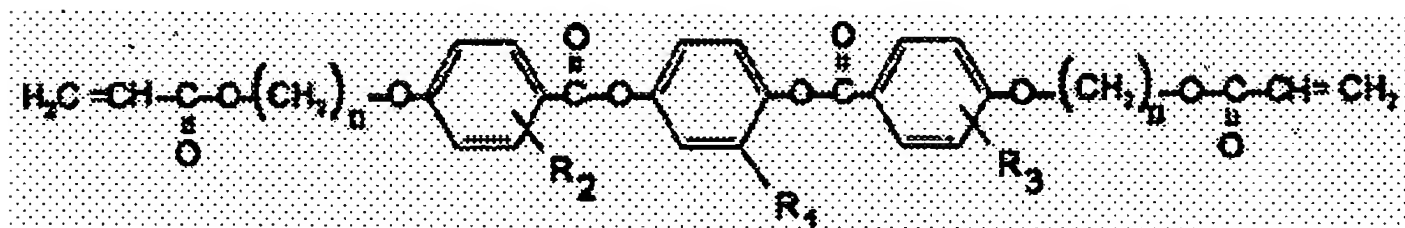
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This is identical with the claims.

10. Claims 139, 143, 147, and 149 are rejected under 35 U.S.C. 102(a) as being anticipated clearly by Rawls et al (ACS polymer preprints, 9/1997, p. 167-168, vol. 38(2)).

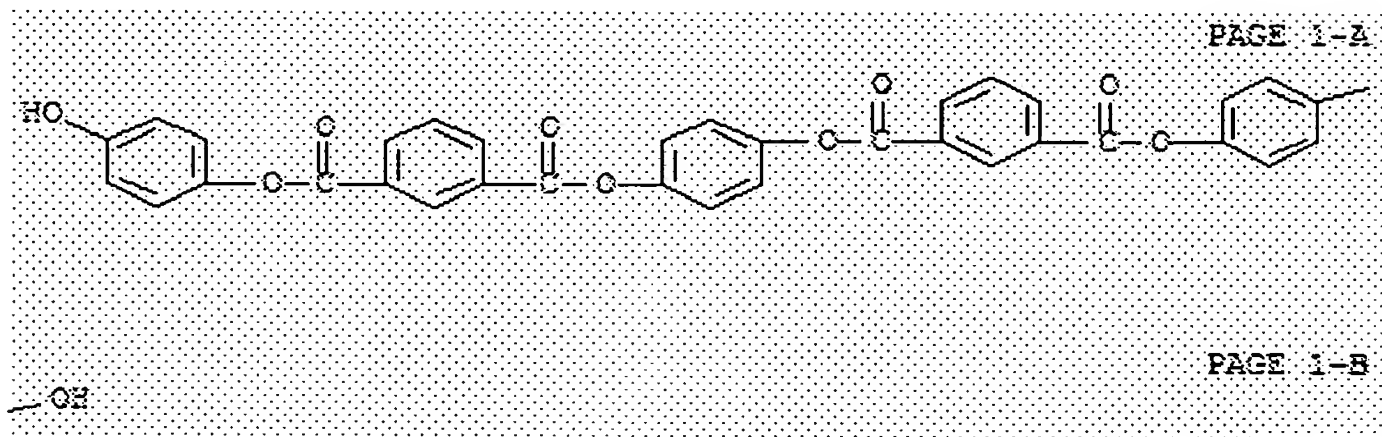
Rawls et al discloses the following compound below (see abstract):



when  $n=6$ ,  $R_1 = \text{CH}_3\text{O}$  or  $t\text{-butyl}$ . This is identical with the claims.

11. Claims 139-140 are rejected under 35 U.S.C. 102(a) as being anticipated clearly by Bigg et al (Annual Tech. Conference –society of plastics engineers (2000), 58<sup>th</sup> (vol. 10, p. 1228-1231) .

Bigg et al discloses the following compound below (see abstract):



This is identical with the claims.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Taylor Victor Oh whose telephone number is 571-272-0689. The examiner can normally be reached on 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cecilia Tsang can be reached on 571-272-0562. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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*5/30/05*